RCA

PRO WONDER

VIDEO CAMCORDER

CMR300

Owner's Manual

Warranty Registration

It is important that you record your RCA Camcorder serial number and other information here, in case you need a complete description for any reason, such as theft. You will find the model and serial numbers on the bottom of the Camcorder. You will also find both numbers recorded on your registration form.

If your dealer did not give you a copy of your Camcorder's registration, contact him promptly and ask for it. If your Camcorder is not registered, we will not be able to contact you should there be a safety inspection, modification or product recall under applicable laws or regulations. Also, you must be able to show your registration or evidence of purchase date to receive warranty parts and service. *We suggest you attach your sales slip and warranty registration to this booklet and keep them in a safe place for future reference.*

RCA Warranty Registration

RCA

SAMPLE

RCA Consumer Electronics

DO NOT STAPLE

Purchase Date _____

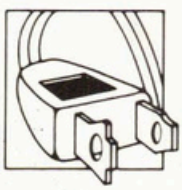
Dealer Name & Address _____

_____

Model: CMR300 Serial Number _____

Safety Precautions

Your Video Camcorder AC Adapter/Charger will operate on 100-240 volts AC, 50/60 Hz and has a polarized plug. Because one blade of the plug is wider than the other, the plug fits in the wall socket only one way. Do not defeat the safety feature of this plug. If you need an extension, use a polarized cord.



CAUTION: To prevent electric shock do not use the polarized plug on this Video Camcorder AC Adapter/Charger with an extension cord, receptacle, or other outlet unless the blades can be fully inserted to prevent blade exposure.

MISE EN GARDE: Pour prévenir les chocs électriques, ne pas utiliser la fiche polarisée de cet appareil avec une rallonge, une prise de courant ou une autre sortie, à moins que les lames ne puissent être insérées à fond sans qu'aucune partie ne soit laissée à découvert.

CAUTION: To reduce the risk of electric shock, do not remove the cover or back. No user-serviceable parts are inside. If you spill liquid on the Camcorder disconnect the AC Adapter/Charger power cord to prevent possible fire or shock hazard and consult authorized service personnel. Moisture can damage internal parts. Refer all service to RCA Authorized Video Camera Servicenter personnel only.

CAUTION: Read "Important Safety Instructions for AC Adapter/Charger" on next page before use.

CAUTION: Maintain electrical safety. Powerline-operated equipment or accessories connected to this unit should bear the UL listing mark or CSA certification mark on the accessory itself and should not have been modified so as to defeat the safety features. This will help avoid any potential hazard from electric shock or fire. If in doubt, contact qualified service personnel.

WARNING: To prevent fire or shock hazard, do not expose Camcorder or AC Adapter/Charger to rain or moisture.

Illustrated below is the label on the back of your AC Adapter/Charger and the bottom of your Video Camcorder

The symbol of a lightning flash within a triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shocks.

An exclamation point within a triangle is intended to alert the user to the presence of important operating and maintenance (service) instructions in the literature accompanying the product.

IMPORTANT SAFETY INSTRUCTIONS FOR AC ADAPTER/CHARGER

- Before using AC adapter/charger, read all instructions and cautionary markings on (1) AC adapter/charger, (2) battery, and (3) product using battery.

- **CAUTION:** To reduce risk of injury, charge only rechargeable battery, type CB060/CB120. Other types of batteries may burst, causing personal injury and damage.
- Do not expose charger to moisture of any kind.
- Use of an attachment not recommended or sold by the battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.
- To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting charger.
- Make sure cord is located so that it will not be stepped on, tripped over, or otherwise subjected to damage or stress.
- Use of improper extension cord could result in a risk of fire and electric shock. If extension cord must be used, make sure that:

(1.) Pins on plug of extension cord are the same number, size, and shape as those of plug on charger.
(2.) Extension cord is properly wired and in good electrical condition; and
(3.) Wire size below is met;

Minimum AWG size	Length of extension cord (feet)
18	Equal to or less than 100
16	Equal to or less than 150

- Do not operate charger with damaged cord or plug—replace them immediately.
- Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified serviceman.
- Do not disassemble charger; take it to an RCA Authorized Video Camera Servicenter when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.
- To reduce risk of electrical shock, unplug charger from outlet before attempting any maintenance or cleaning.

Introduction

Congratulations on your choice of an RCA Camcorder. You have selected a precision-engineered product designed to give you years of performance and enjoyment.

Although your Camcorder is very simple to use, it is important that you read and carefully follow the instructions in this guide until you are completely familiar with the proper operating procedures. This manual is arranged in the order that we anticipate you will use it to operate your new Camcorder, and if you follow the instructions one step at a time, you should be able to use your Camcorder like a pro in about an hour.

If you should experience a problem, always refer first to the troubleshooting chart on Page 17. In many cases, a simple solution is all that's needed, and it could save you a costly service call.

BE SURE TO SAVE THESE OPERATING INSTRUCTIONS for future reference.

Should your Camcorder require service during the warranty period, refer to the back cover of this manual for a description of what RCA will do and instructions on how to request service.

Contents

FEATURES AND FUNCTIONS
What Your Camcorder Can Do For You 3

PREPARATIONS FOR USE
Unpacking Your Camcorder 4
Attaching Viewfinder to Camcorder 4
Loading Batteries for Date/Clock 4
Quick Operation Steps For Experienced Users 4

LOCATION AND USE OF CONTROLS
Camcorder Operating Controls and Their Functions 5

BASIC OPERATION
How To Power Your Camcorder 9
Charging Your Battery 9
Using the Battery To Power Your Camcorder 9
Battery Level Indicators 9
Using the AC Adapter/Charger 10
Using the Optional DC Car Cord 10
How To Record With Your Camcorder 11
Using Your Camcorder's Recording Features 11
Electronic Viewfinder 11
Focusing Your Camcorder 13
Automatic White Balance 13
Auto/Manual Iris 13
Quick Review 13
How To Play Back Tapes With Your Camcorder 14
Connection to Standard TV 14
Connection to Video Monitor 14
Connection to VCR 14
Playback Operation 15

CAMCORDER ACCESSORIES
Tripod Mounting 16
Carrying Handle and Shoulder Strap 16
Using an External Microphone 16
Optional Accessories 16

TROUBLESHOOTING CHART 17
MAKING BETTER VIDEOS 17
CARE AND MAINTENANCE 18
INDEX 18
SPECIFICATIONS ..... Back Cover
RCA CAMCORDER LIMITED WARRANTY ..... Back Cover

Features and Functions

What Your Camcorder Can Do For You

Your RCA Camcorder combines the features of a video camera and a VHS video cassette recorder in one lightweight, easy-to-use unit. As a result, you can now perform all of the following:

- **Make your own video home movies.** Tape your video memories quickly and easily, with color and sound, on inexpensive VHS cassettes. VHS cassettes are available in your choice of 60 Min. (T-60), 2 Hr. (T-120) and 2 Hr., 40 min. (T-160) lengths. For optimum picture quality, your Camcorder records and plays back tapes exclusively in the VHS Standard Play mode, known as SP.
- **Play back tapes immediately through built-in electronic viewfinder.** Black & white electronic viewfinder shows exactly what is being recorded during taping—and allows "instant replays" after recording so you can review what you have taped.
- **Play back pre-recorded tapes on standard TV or Monitor.** Using included cables, you can use your Camcorder to play pre-recorded tapes on any TV. Adapters are included for use with either a standard TV or a Video Monitor. (Tapes must have been recorded in SP speed.)
- **Record from another VCR or Monitor.** With an optional adapter, you can hookup your Camcorder to another VCR or Monitor and use the Camcorder to record TV shows or copy your home tapes.
- **Use your Camcorder on AC or DC power.** Included with your Camcorder is an AC Adapter/Charger and a Rechargeable Battery. With the AC adapter/charger attached, you can power the Camcorder from the nearest AC outlet. With the charged battery attached, you can use your Camcorder virtually anywhere for up to two hours. And with an optional 12-volt DC cord, you can even power the Camcorder from your car's cigarette lighter socket.
- **Use your Camcorder virtually anywhere in the world.** The Camcorder's AC adapter/charger operates on 100-240 volts AC, 50 or 60 Hz, giving it the versatility to operate in most foreign countries. Before taking your Camcorder on vacation, however, consult your RCA dealer; you may need a plug adapter in some countries.
- **Create professional-looking video productions.** Your Camcorder has the latest convenient features to make your videotaping as trouble-free and enjoyable as possible. You can zoom in or out at the touch of a button. The Camcorder will adjust focus automatically so you don't have to bother. Color balance is also controlled automatically—indoors or out. A "quick review" button lets you double check recording results and set up your next scene. A time remaining display tells you how much recording or playback time is left on a cassette. What's more, a date/time display lets you record the date and time on home tapes. For quick scene location, both Visual Search and a viewfinder tape counter are provided. There's even a viewfinder adjustment that makes it easy to use the Camcorder if you wear eyeglasses.
- **Add optional accessories for greater creative versatility.** RCA offers a full line of compatible accessories for your Camcorder to increase your creative range when making video productions.

RCA Video Cassettes

Note: To insert and remove a cassette, be sure to connect the power source to your Camcorder.

Video Cassettes

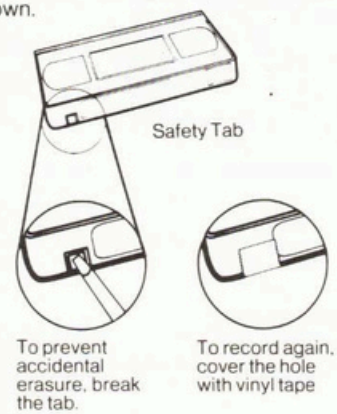
RCA recommends that RCA cassettes be used with this unit. The tape in these cassettes is of high-quality formulation. It has been manufactured to RCA's critical specifications, for excellent performance. Use of tape not meeting these specifications could considerably reduce the performance of your Camcorder.

Use of poor quality tapes or tapes that have been damaged or mishandled can contaminate the video heads, resulting in a snowy picture or no picture at all during playback. Because RCA has no control over the type of tape purchased or rented by consumers, **head cleaning is not covered by RCA's warranty.** It is considered normal maintenance.

Playing a new RCA tape for approximately 30 minutes will often satisfactorily clean the heads and improve your picture. If a snowy picture or no-picture condition persists, consider the use of a chemical non-abrasive head cleaning tape (RCA Stock No. AV009W) available from your dealer or many electronic supply stores.

Erase Protection

To prevent accidental erasure of recorded material, remove the safety tab from the back of the cassette as shown below. Recording is impossible when this tab is removed. To record again on a cassette that has the tab removed, simply cover the safety-tab hole with vinyl tape as shown.



To prevent accidental erasure, break the tab.

To record again, cover the hole with vinyl tape

Recording Time

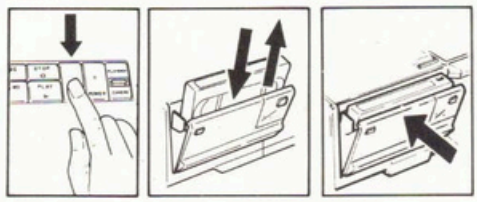
The Camcorder records and plays back in VHS standard speed (SP). Listed below are the maximum SP recording times for popular RCA VHS cassettes.

CASSETTE	RECORDING TIME
T-60	60 Min.
T-120	2 Hrs.
T-160	2 Hrs., 40 Min.

To insert or remove cassettes:

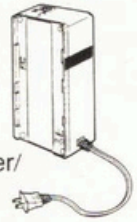
CAUTION: Insert cassette only one way with safety tab facing up and tape windows facing out.

❶ Press Eject Button. ❷ Insert or remove cassette. ❸ Close cassette compartment.



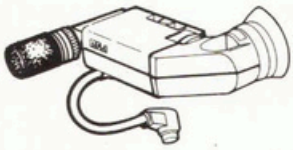
Preparations for Use

Camcorder



AC Adapter/
Charger

Rechargeable
Battery Pack

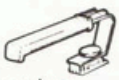


Electronic
Viewfinder with
Microphone

Audio/Video
Adapter Cable

RF Adapter

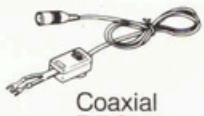
Earphone



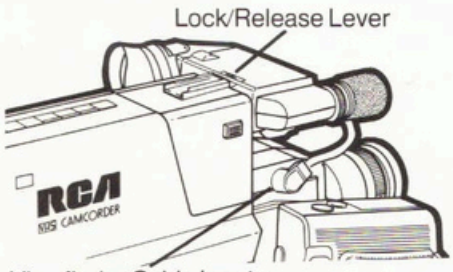
Carrying
Handle

Shoulder
Strap

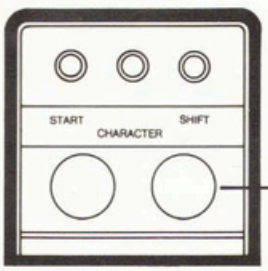
300/75-ohm
Transformer



Coaxial
RF Cable



Viewfinder Cable Input



Battery
Compartment

SIDE OF CAMCORDER
(Remove the cover)

Unpacking Your Camcorder

Since you are reading this manual, you have obviously opened your Camcorder's packing box and have probably already unpacked most of the items. Once you've removed the packing materials, *the first thing you should do* is make sure you have everything you need. In the Camcorder's box, you should find the following items:

1. the Camcorder itself;
2. an AC adapter/charger;
3. a rechargeable battery pack;
4. an electronic viewfinder with microphone;
5. an RF adapter;
6. an audio/video adapter cable;
7. an earphone;
8. a carrying handle;
9. a shoulder strap;
10. a coaxial RF cable;
11. a 300/75-ohm transformer;
12. batteries for clock.

Attaching Viewfinder to Camcorder

At the top of the viewfinder module, you will find a lever labeled *LOCK/RELEASE*. Move the lever to *RELEASE* and slide the viewfinder into the rails provided. Hold the Camcorder up and place the viewfinder to your eye. Slide the viewfinder horizontally until you can look into it comfortably, then move the *LOCK/RELEASE* lever to *LOCK*. Now plug the viewfinder cable into the nearby jack on the Camcorder. The cable plug has a tab reference mark which you should align with the notch in the jack.

Loading Batteries for Date/Clock

Slide the Battery Cover downward to expose the Clock Controls and the Battery Compartment. Insert the clock batteries (supplied) with the "+" terminal facing out (as shown in the drawing on the inside of the Battery Cover). See page 12 for instructions on setting the clock.

If any of these items are missing or appear damaged, contact your RCA dealer immediately. Also, you should save all of the packing materials; they will come in handy in the event you have to store or ship the Camcorder. In preparing your Camcorder for initial use, you will need only the Camcorder, the AC adapter/charger, the battery and the viewfinder. Put the other items aside for now. We will discuss their use later in the guide.

Quick Operation Steps For Experienced Users

If you've used a video camera and VCR before, you can probably get your Camcorder up and running quickly by using the following steps:

1. Attach the viewfinder to the Camcorder as outlined at the left.

2a. For AC operation, attach the AC adapter/charger (see Page 10), plug it into an AC outlet and flip the *CAMERA/CHARGE* switch to *CAMERA*.

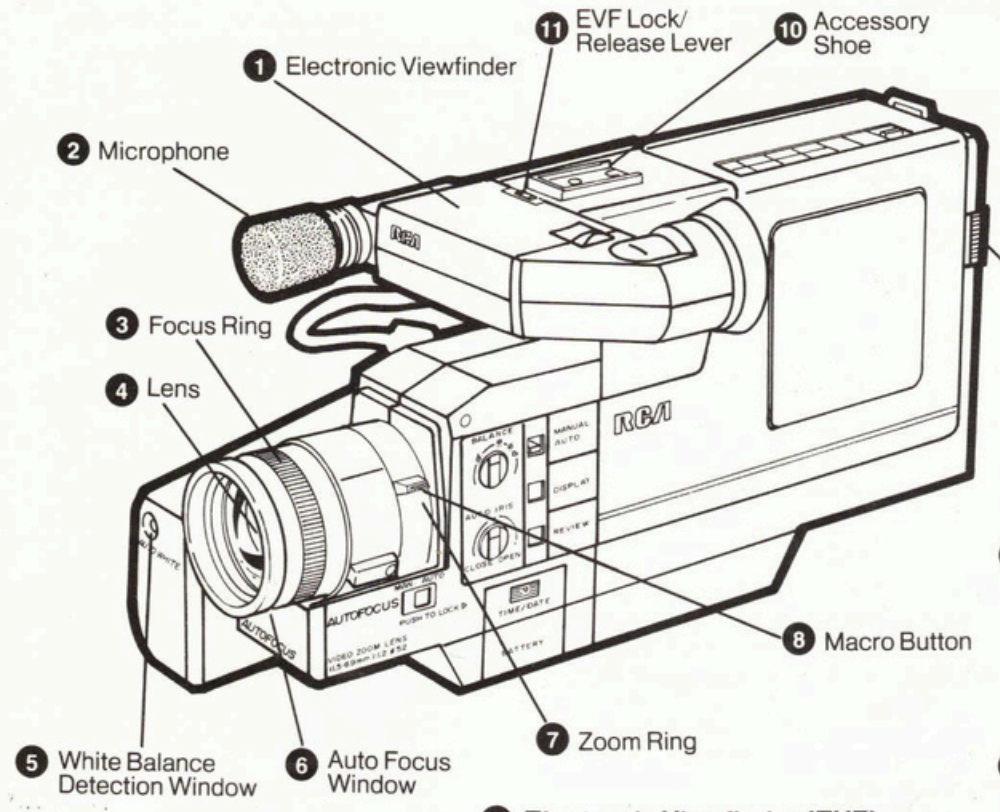
2b. For battery operation, you will have to first attach the battery to the AC adapter and charge the battery. This procedure is described on Page 9. (The battery takes about two hours to fully charge. While you are waiting, why not read the rest of the manual.) After the battery is charged, attach it to the Camcorder, following the directions on Page 9.

3. Set the *FOCUS, WHITE BALANCE,* and *IRIS* switches to *AUTO*.

4. Press the Camcorder's *POWER* button and you are ready to go. Remember the Camcorder uses standard VHS cassettes and records exclusively at the SP speed. After inserting a cassette, place the *PLAYBACK/CAMERA* switch in *CAMERA* position for recording, and in *PLAYBACK* position for playback through the viewfinder. The thumb trigger control switches you from *RECORD* to *PAUSE* with a single touch when in *CAMERA* mode.

5. After using the Camcorder for the first time, be sure to read the rest of the manual for full details of its features, accessories, and proper care.

Location and Use of Controls



Camcorder Operating Controls and Their Functions

Pages 5 through 8 tell you where Camcorder controls are located and what they do. As you read the description of each control, find that control on your own Camcorder to familiarize yourself with its location.

1 Electronic Viewfinder (EVF)
The electronic viewfinder displays what the Camcorder lens sees. The electronic viewfinder also functions as a convenient black & white monitor during playback of recorded video.

2 Microphone
The microphone is mounted on the EVF near the front of the Camcorder and is more sensitive to sounds coming from the direction in which the lens is pointed. When the microphone is removed, the exposed jack will accommodate an optional external microphone.

3 Focus Ring
Turning this ring will change the focus of the lens when the Camcorder is in the *MANUAL FOCUS* mode.

CAUTION: Do not attempt to manually turn the *FOCUS RING* when the Camcorder is in *AUTO FOCUS* mode.

4 Lens
Your Camcorder is equipped with an f1.2, 6:1 power zoom lens which directs incoming light to the solid state MOS image sensor.

5 White Balance Detection Window
Detects the white balance signal. For proper white balance operation, do not block the window with your hand or another object.

6 Auto Focus Window
To automatically focus the camera lens, this window transmits and receives infrared light which is reflected off the subject. Make sure you don't obstruct this window when recording.

7 Zoom Ring and Lever (for manual zooming)
The size of the picture you are recording can be magnified with the use of the zoom lens. Just rotate the *ZOOM RING* for a close-up or wide-angle picture.

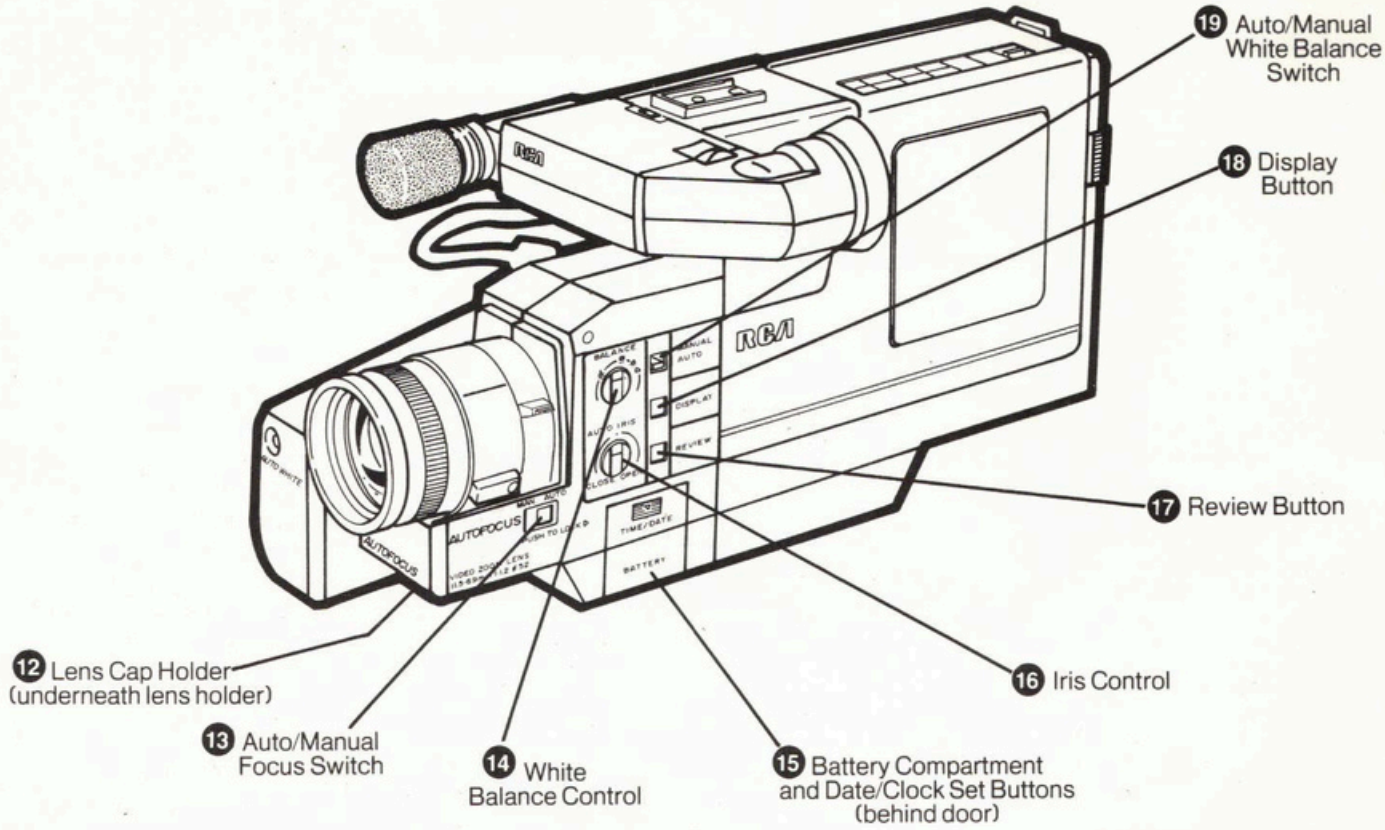
8 Macro Button
For shots as close as 3/8 inch from your subject, rotate the *ZOOM RING* to the *MACRO* position while pushing in and holding the *MACRO BUTTON*. Slowly rotate the *ZOOM RING* until sharp focus is achieved.

9 Battery Eject Lever
Slide this lever *DOWN* to release the battery or the AC adapter/charger from the Camcorder.

10 Accessory Shoe
This fitting is used to attach the carrying handle or an optional microphone or other lightweight video accessory.

CAUTION: Do not use this shoe to mount a light on the Camcorder. Heat from the light could cause damage to the Camcorder's case.

11 EVF Lock/Release Lever
This lever lets you adjust the viewfinder for optimum comfort. Move the lever to *RELEASE* to adjust the EVF left or right to the desired position. When the EVF is adjusted to your preference, move the lever back to *LOCK*.


19 Auto/Manual White Balance Switch
18 Display Button
17 Review Button
16 Iris Control
12 Lens Cap Holder (underneath lens holder)
13 Auto/Manual Focus Switch
14 White Balance Control
15 Battery Compartment and Date/Clock Set Buttons (behind door)

12 Lens Cap Holder
Place the lens cap in this holder when you are ready to record a scene. The holder also prevents the lens cap from swinging around on its cord.

13 Auto/Manual Focus Switch
Set this switch to the *AUTO* position for automatic focus, and to the *MANUAL* position when you wish to use the *FOCUS RING*. When the switch is pushed inwards while in the *MANUAL* position, automatic focus is activated and remains activated until the switch is released. This is useful if you are shooting a relatively static scene in *MANUAL FOCUS* and need to quickly and momentarily use *AUTO FOCUS* for a change in scene.

14 White Balance Control
Use this control to adjust the color balance manually. Set the *WHITE BALANCE* switch to *MANUAL*, and while viewing a color monitor, rotate this control for a natural picture.

15 Battery Compartment and Date/Clock Set Buttons (behind door)
The controls behind the side panel door let you set the Camcorder's internal clock for the correct date and time. (See Page 12 for clock set procedure.) The door also covers the battery compartment. With two batteries installed, the Camcorder will "remember" the correct day and time for approximately one year. (See Page 4 for battery installation procedure.)

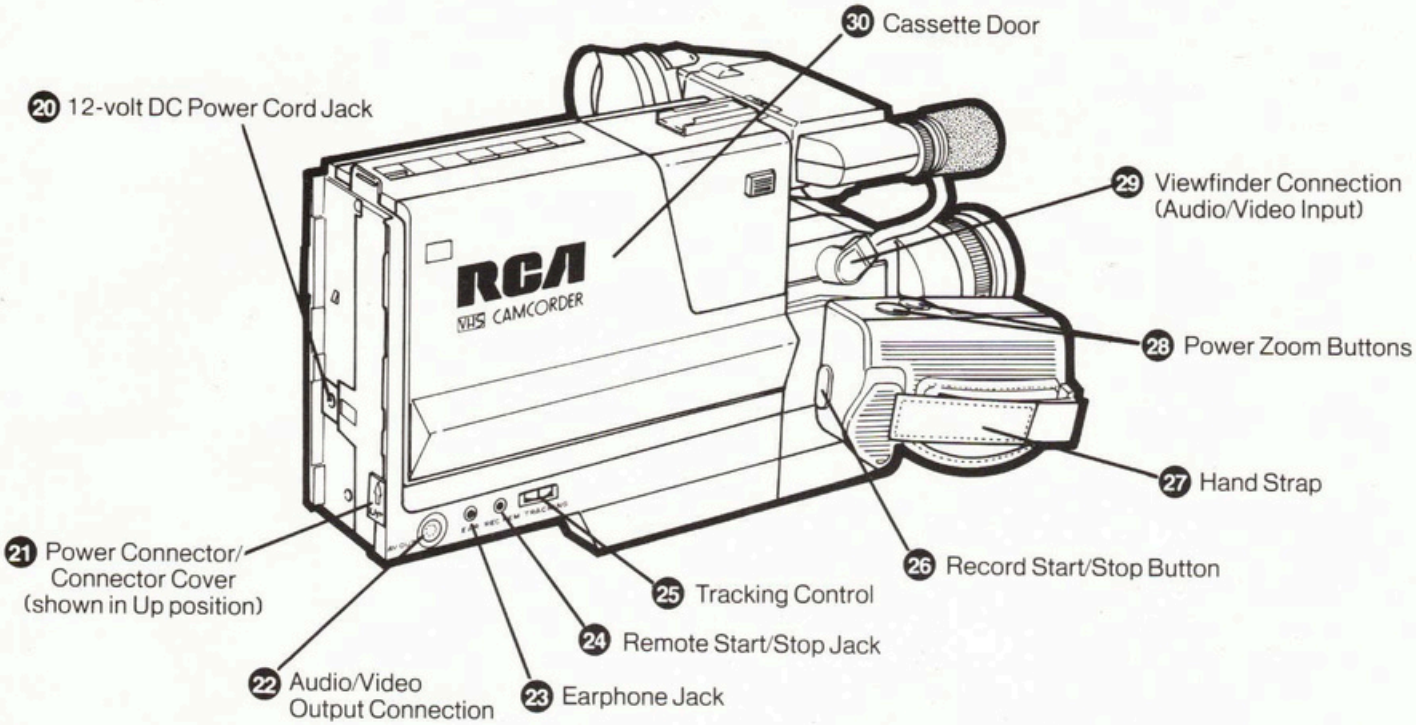
16 Iris Control
With this control in the CENTER position, the Camcorder automatically adjusts the lens opening for the best picture. The lens iris opening can also be manually adjusted to compensate for unusual lighting. When the subject is in bright light and the background is dark, turn this control counterclockwise to close the lens iris opening. When the background is in bright light and the subject appears too dark, adjust the control clockwise to open the lens iris.

17 Review Button
Press the *REVIEW* button while the Camcorder is in the *RECORD/PAUSE* mode to view the last four seconds of a completed recording segment.

18 Display Button
This button is used to display the date and clock read-out in the viewfinder for recording on a tape. The *DISPLAY* button is also used when setting the date/clock display.

19 White Balance Switch
When this switch is in the *AUTO* position, the color balance is set automatically. Place the switch in *MANUAL* position to adjust the color balance to suit your personal preference (using a color monitor to view the results).

Location and Use of Controls, cont'd.



20 12-volt DC Power Cord Jack
This jack lets you operate your Camcorder from the cigarette lighter socket of a car (using the optional DCC012 power cord) or any other suitable 12-volt DC source.

21 Power Connector/Connector Cover
This connector is used to attach the battery or the AC adapter/charger. The connector cover protects the power connector from damage and should be in the *UP* position at all times.

22 Audio/Video Output Connection
Connect the supplied audio/video connector cable or RF adapter to this jack, and the video being recorded or played back on the Camcorder can be displayed on your TV or Monitor, or even recorded on another VCR. The RF adapter connects the Camcorder to the standard antenna of a TV. The audio/video cable connects the Camcorder to the direct inputs of a video monitor or VCR.

23 Earphone Jack
You can plug the supplied earphone into this jack for private monitoring of audio during recording or playback.

24 Remote Start/Stop Jack
This jack is used to connect the optional CRM010 Remote Record Start/Stop switch. This accessory allows activation of the Camcorder's record/pause functions while the operator is away from the Camcorder itself.

25 Tracking Control
When playing prerecorded tapes or tapes recorded on other VHS video recorders, black or white streaks may appear on your TV or display monitor screen. Turn the *TRACKING* control slowly in either direction until the streaks disappear.

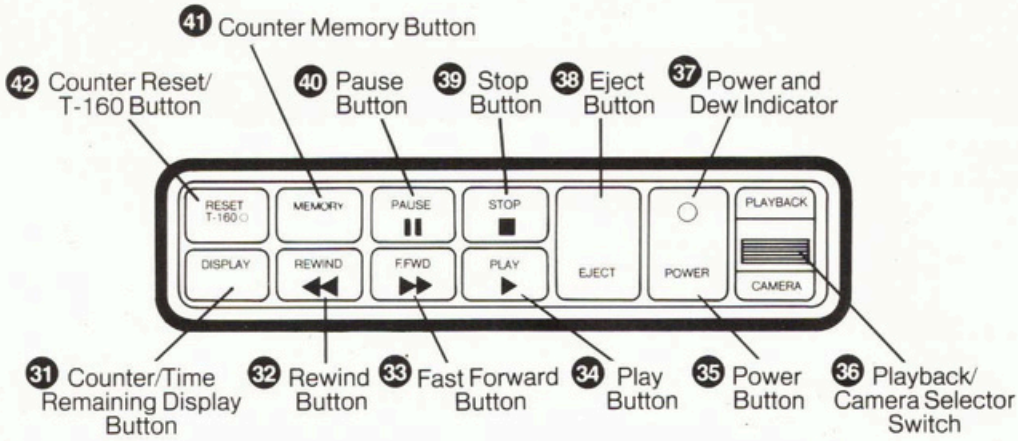
26 Record Start/Stop Button
This thumb control is used to change the Camcorder from *PAUSE* to *RECORD* and vice versa. With the Camcorder in the *CAMERA* mode, push the *START/STOP* button once and the Record indicator in the viewfinder will light. The Camcorder is recording whenever this light glows. Press the button again and the Camcorder will go into the *PAUSE* mode. It is not necessary to hold down the *RECORD START/STOP* button while recording.

27 Hand Strap
This strap is designed to provide comfort and ease of operation while using the Camcorder. The strap is adjustable for a personalized fit.

28 Power Zoom Buttons
These switches control the Camcorder's power zoom motor. Press the switch labeled *W* and the zoom lens will move in the *WIDE ANGLE* direction. Press the switch labeled *T* and the zoom lens will move in the *TELEPHOTO* (close-up) direction. When you grasp the Camcorder properly using the handle, the zoom buttons are easily controlled by your index and middle fingers.

29 Viewfinder Connection (Audio/Video Input)
The viewfinder cable plugs into this connection linking it with the Camcorder's audio/video circuitry. You can also disconnect the viewfinder and attach the optional VAA002 audio/video input adapter to this connection, allowing Camcorder recording of external audio and video from VCRs, component tuners and other devices. The optional CGA020 Character Generator/Titler also uses this jack.

30 Cassette Door
This door can be opened for cassette insertion or removal whenever the Camcorder is attached to a power source. To open the cassette door, press the *EJECT* button on the Camcorder's top control panel. Insert a standard VHS cassette and close the door by hand.



TOP CONTROL PANEL

31 Counter/Time Remaining Display Button
Pressing this button once causes a 4-digit tape counter and battery indicator display to appear in the Camcorder's electronic viewfinder. Press again to display the battery indicator and the amount of time remaining on the cassette in the Camcorder. Press a third time to delete all displays.

32 Rewind Button
Press to rewind a tape after either recording or playback. During *PLAY* mode, pressing and holding the *REWIND* button will scan program material in reverse. To return to normal playback from *SEARCH* mode, release the *REWIND* button.

33 Fast Forward Button (F.FWD)
Press this button while the Camcorder is in the *STOP* mode to rapidly advance the tape in the forward direction. Press and hold this button while the Camcorder is in the *PLAY* mode to visibly scan through program material in the forward direction. To return to normal playback, release the *F. FWD.* button.

34 Play Button
With the *PLAYBACK/CAMERA* switch in the *PLAYBACK* position, press the *PLAY* button to play back recorded material.

35 Power Button
This button turns the Camcorder's power on and off.

36 Playback/Camera Selector Switch
This switch puts the Camcorder in the *PLAYBACK* mode or the *RECORD/PAUSE* mode. The switch must be in *CAMERA* position for recording and *the PLAYBACK* position for viewing tapes.

37 Power and Dew Indicator
This light glows whenever the Camcorder is turned on. Blinking of the power light indicates excessive moisture in your Camcorder, and an internal protection feature will prevent the unit from operating until the moisture is gone. Leave the power on, and when the light stops blinking, the unit can be operated.

38 Tape Eject Button
This button is pressed to open the cassette door for tape insertion or removal. The Camcorder must be attached to a power source in order to load or remove a cassette.

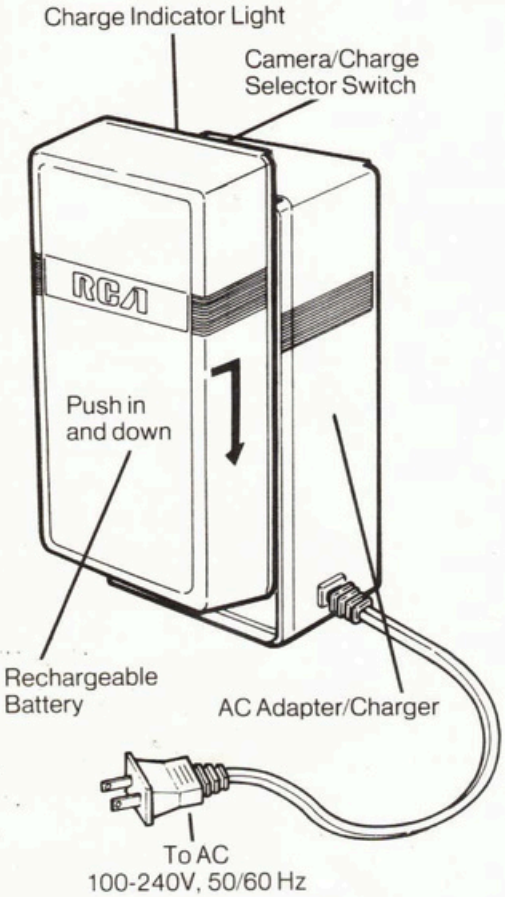
39 Stop Button
The *STOP* button is used to stop playback, rewind, and fast forward operations. This button has no effect during recording.

40 Pause Button
Press this button during playback to display a still picture on the viewfinder. During recording, a thumb trigger control activates the *PAUSE* function.

41 Counter Memory Button
This button lets you index any place on a tape so that the Camcorder will stop at that point during fast forward or rewind. When this button is activated, the letter "M" will appear next to the counter or time remaining display in the viewfinder. With the memory function active, the Camcorder will stop rewind or fast forward operation when the tape counter reaches 0000.

42 Counter Reset/T-160 Button
When the tape counter is displayed in the viewfinder, pressing this button resets the counter to 0000. When the time remaining read-out is displayed, pressing this button adapts the display for extended length T-160 (2 Hr., 40 Min.) tapes. The light on this button glows when the Camcorder is in T-160 tape mode.

Basic Operation: Power Supplies



CAUTION: When a battery is attached, do not turn the AC adapter/charger upside down, even if the adapter/charger is attached to the Camcorder. The battery may fall off and be damaged. It could also cause injury.

CAUTION: When the battery reaches its empty level during use, the Camcorder will shut off. However, the battery should have enough reserve power to eject the cassette when you press the *EJECT* button. If the Camcorder does not eject the cassette when you press *EJECT*, **do not attempt to force the cassette door open.** This will damage your Camcorder. To remove the cassette, simply power your Camcorder with the AC adapter/charger or recharge the battery before attempting to eject the tape.

How to Power Your Camcorder

Your Camcorder is designed to be used with any of three different power sources. When videotaping in locations away from conventional AC power sources, you may power your Camcorder by using the battery, or power it from the cigarette lighter socket in your car with RCA's optional DCC012 DC car cord. The Camcorder may also be powered by household current (100-240 volts, AC, 50/60 Hz) when using the supplied AC adapter/charger. The AC adapter/charger even lets you use your Camcorder in most foreign countries. (You may need a plug adapter in some countries; consult your RCA dealer.)

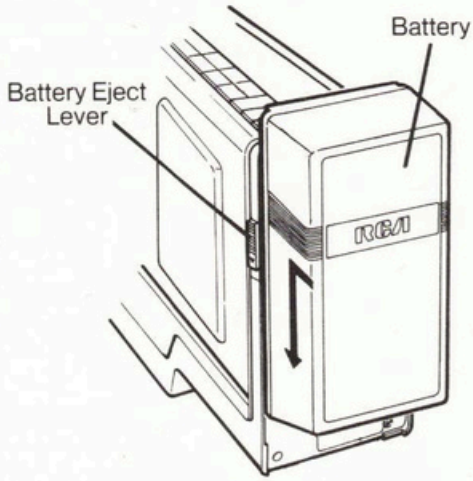
These two pages will tell you how to charge and attach the battery to your Camcorder, as well as how to power the Camcorder from AC power or from the cigarette lighter socket of a car.

Charging Your Battery

Recharging the Camcorder's standard battery takes approximately 2 hours, depending on the battery's condition. After repeated charging and use, operation time will gradually decrease. When operation time becomes too short to be useful, it's time to replace the battery.

When fully charged, your Camcorder battery should supply about 2 hours of operating time. The battery is charged using the procedures below:

1. Attach the battery to the AC adapter/charger as shown at the left. Align the reference notches on the battery with the notches on the back of the AC adapter/charger. Then push the battery flush with the adapter and slide it downward.
2. Plug the AC adapter/charger into the nearest AC outlet (100-240V, 50/60 Hz).
3. Place the AC adapter's *CAMERA/CHARGE* switch in the *CHARGE* position. The Charge indicator will light while the battery is being charged. When the light goes out, the battery is fully charged.
4. Remove the battery from the AC adapter/charger by sliding the battery up and off. The next section will show you how to attach your charged battery to the Camcoder.

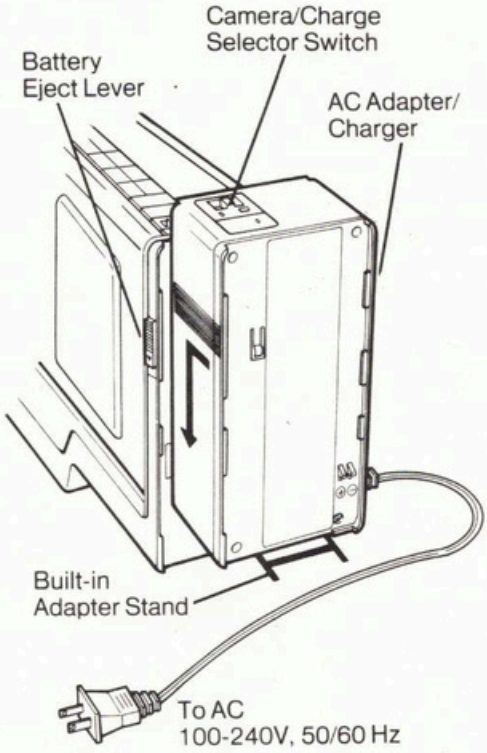


Using the Battery to Power Your Camcorder

1. Be sure the Camcorder's *CONNECTOR COVER* is in the *UP* position. (See page 7 for location.)
2. Align the tabs on the battery with the notches on the back of the Camcorder.
3. Slide the battery in the direction of the arrow, as shown.
4. Press the Camcorder's *POWER* button. If the battery is properly connected, the *POWER* indicator should light.
5. To remove the battery, hold the *BATTERY EJECT* lever *DOWN* while sliding the battery *UP*.

Battery Level Indicators

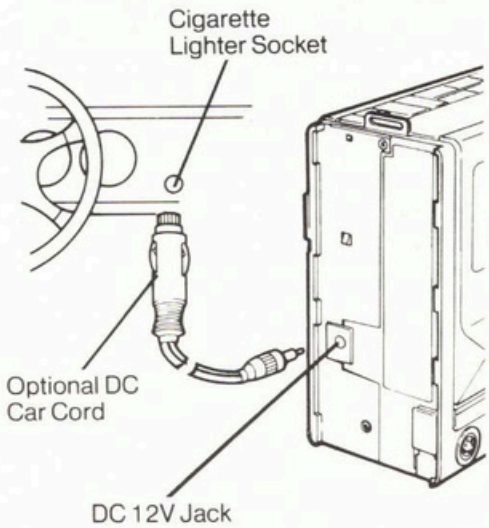
Whenever the tape counter or time remaining display is present in the viewfinder, it appears with a 3-dash read-out indicating the approximate status of Camcorder battery power. When the battery is fully charged, the display reads "E- - - F". After several minutes, only two dashes appear. When the battery is very near empty, only one dash remains. When the last dash starts blinking, you should find an alternative power source or recharge the battery before continuing to use your Camcorder.



Using the AC Adapter/Charger to Power Your Camcorder

1. Be sure the Camcorder's *CONNECTOR COVER* is in the *UP* position. (See page 7 for location.)
2. Align the tabs on the adapter/charger with the notches on the back of the Camcorder.
3. While holding the adapter/charger against the back of the Camcorder, slide the adapter/charger down in the direction of the arrow, as shown.
4. Plug the adapter/charger into the nearest AC outlet (100-240V, 50/60 Hz).
5. Place the adapter's *CAMERA/CHARGE* Switch in the *CAMERA* position.
6. Press the Camcorder's *POWER* button. If the AC adapter/charger is properly connected, the Power indicator should light.
7. To remove the AC adapter/charger, hold the *BATTERY EJECT* lever *DOWN* while sliding the adapter/charger *UP*.

NOTE: The AC adapter/charger may be attached to the Camcorder during battery charging, but you cannot charge the battery and operate the Camcorder from the AC adapter/charger at the same time. When all three components are connected, the AC adapter/charger's *CAMERA/CHARGE* Switch determines where power will be directed. *CAMERA* position lets you operate the Camcorder from AC power. *CHARGE* position recharges the battery.



Using the Optional DC Car Cord to Power Your Camcorder

To power your Camcorder from a car's 12-volt electrical system, you will need RCA's optional DCC012 DC car cord. The proper steps for using the Camcorder with the DC car cord are outlined below.

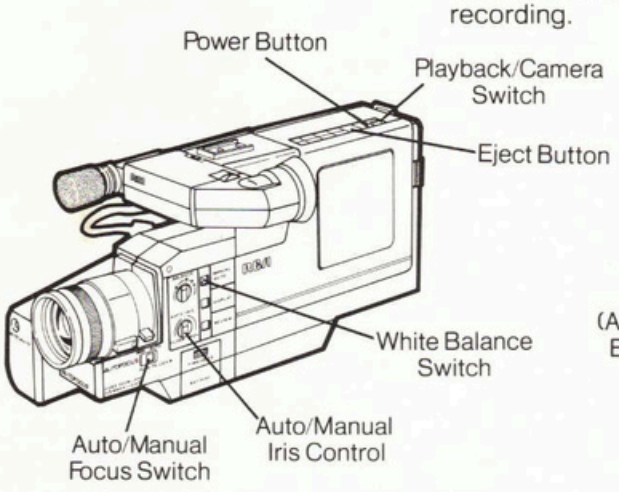
1. Connect the small plug on the DC car cord to the DC 12V jack on the back of the Camcorder.
2. Insert the other end of the DC car cord into the vehicle's cigarette lighter socket.
3. Press the Camcorder's *POWER* button. If the car cord is properly connected, the *POWER* indicator should light. Your car's ignition does not have to be turned on for Camcorder operation.

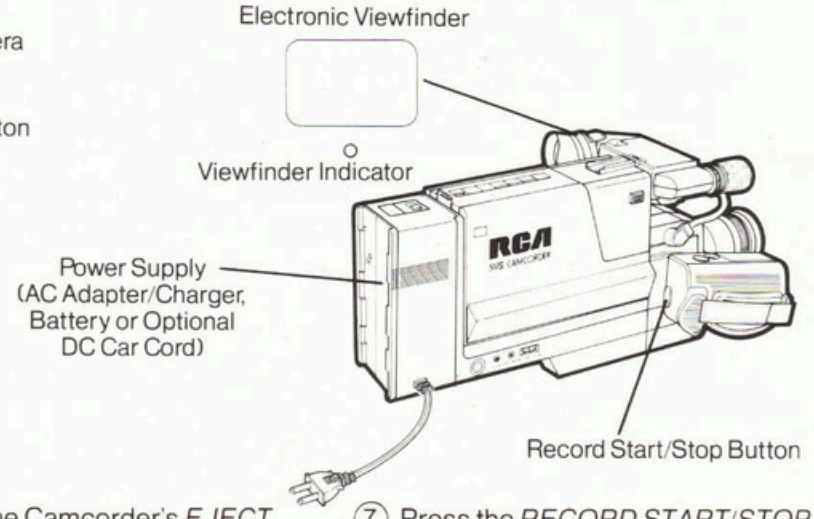
CAUTION: The DCC012 DC car cord is designed to be used only with automobiles having 12-volt *negative ground* electrical systems.

Basic Operation: Recording

How to Record with Your Camcorder

After you have your Camcorder connected to a power source (AC adapter/charger, battery, or DC cord), use the following steps to make a recording.





1. Push the Camcorder's *POWER* button. The Power light should come on.
2. Put the Camcorder's *PLAYBACK/CAMERA* switch in the *CAMERA* position.
3. Set the *AUTO/MANUAL FOCUS* switch to *AUTO FOCUS;* set the *WHITE BALANCE* switch to *AUTO;* set the *AUTO/MANUAL IRIS* control to the center *(AUTO)* position.
4. Press the Camcorder's *EJECT* button, insert a VHS cassette and close the cassette door.
5. Put your eye to the Camcorder viewfinder and select a scene you wish to record.
6. Press the *RECORD START/STOP* button to begin recording. The viewfinder indicator will light green. (It is not necessary to hold down the *RECORD START/STOP* button.)
7. Press the *RECORD START/STOP* button again to stop recording and enter the *PAUSE* mode. The viewfinder light will go out. Press the *REVIEW* button to review the last four seconds of recorded material. Pressing the *START/STOP* button again will activate *RECORD* mode.
8. After you have completed taping your subject, put the *CAMERA/PLAYBACK* switch in *PLAYBACK* position and rewind the cassette. Then press the *EJECT* button and remove the cassette from the Camcorder.

Recording Features

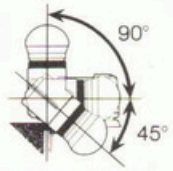
Using Your Camcorder's Recording Features

The steps listed above give you the basics of activating Camcorder recording. However, you should also get to know the Camcorder's special features that will help you make good *looking* recordings. These features can help you shoot like a pro—even if you've never used a video camera or recorder before.

Electronic Viewfinder (EVF)

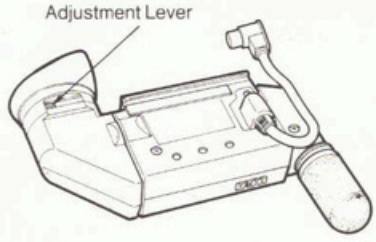
The Camcorder's electronic viewfinder is a miniature black & white monitor that displays the picture seen by the Camcorder when recording. The EVF can also be used for viewing tape playback, as we'll discuss later in this guide. Among the EVF's special features are the following:

- **EVF tilt adjustment:** For convenient viewing, the EVF can be tilted about 90° up and 45° down.

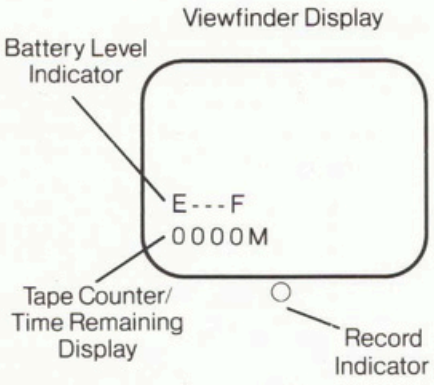


VIEWFINDER SIDE VIEW

- **Eyepiece adjustment:** If you wear eyeglasses, you probably can remove them and still use the Camcorder. To sight through the electronic viewfinder without eyeglasses, use the Adjustment Lever (shown) to adjust viewfinder focus. This will not affect the actual focus of the image recorded by the Camcorder.



Recording Features, cont'd.



- **Record indicator:** The record lamp is located inside the viewfinder and can be seen when sighting through the viewfinder eyepiece (see illustration above). It is used to signal you when the Camcorder is recording.

- **Battery level indicator:** A battery level graphic appears whenever the tape counter or time remaining display is present in the viewfinder. When the battery is fully charged, the display reads "E---F". After several minutes, only two dashes appear. When the battery is very near empty, only one dash remains. When the last dash or the record indicator in the viewfinder blinks, you should find an alternative power source or recharge the battery before continuing to use the Camcorder.

- **Tape counter with memory:** Pressing the *DISPLAY* button on the Camcorder's top control panel causes a 4-digit counter display to appear in the viewfinder (along with the battery level graphic described above). The tape counter acts as a handy reference to help you locate taped segments. Press the *RESET/T-160* button to set the counter to 0000 before starting to record or play. Note the number on the tape counter at the beginning and end of each program you want to record. This will allow you to use the counter to locate desired programs.

  The tape counter also includes a switchable "memory" feature. When the memory is on, the tape automatically stops when the counter reads 0000 during Fast Forward and Reverse. This is useful if there is a section of tape you want to review immediately after recording, or if you want to return to the same point several times in a row.

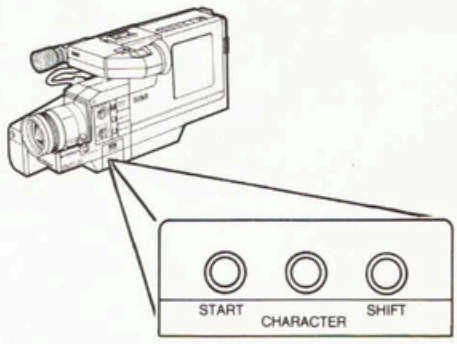
  To use the counter memory, reset the counter to 0000 when you reach the point on a tape you wish to index. Then press the *MEMORY* button. The letter "M" will appear with the counter or time remaining display. Continue to play or record the tape, and when you wish to return to the index point, simply press REWIND. (NOTE: PLAYBACK/CAMERA switch must be in PLAYBACK position.)

- **Time remaining display:** When the tape counter is present in the viewfinder, pressing the top *DISPLAY* button again will change the display to a read-out showing the amount of recording or playback time left on the tape. Pressing the *DISPLAY* button once more clears all graphics from the viewfinder.

  NOTE: When using an extended length T-160 cassette, you must press the *RESET/T-160* button to adapt the Camcorder's time remaining system for an accurate read-out. (If the counter is being displayed, the *RESET/T-160* button resets the counter to 0000.)

- **Date/clock display:** The day and/or time can be recorded on your tapes to act as a handy reference when viewing them at a later time. Use the following procedure to set-up this display for the current date and time:

  1. Load the Camcorder's date/clock batteries as described on Page 4.
  2. Press the *DISPLAY* button on the side of the Camcorder. The graphics shown at right will be displayed in the viewfinder.
  3. Slide the Camcorder's side door downward to expose the date/clock set controls.
  4. Press the *CHARACTER* button until the correct hour appears. Release *CHARACTER* and press the *SHIFT* button.
  5. Repeat Step 4 to set the correct minute.
  6. Press the *CHARACTER* button to set AM or PM, then press the *SHIFT* button.
  7. Repeat Step 4 to set the month, the day and the year.
  8. **Press the *START* button to activate the date/clock.**
  9. Press the side *DISPLAY* button to remove the date/clock display from the viewfinder. The date/clock will continue to keep the correct time in memory.

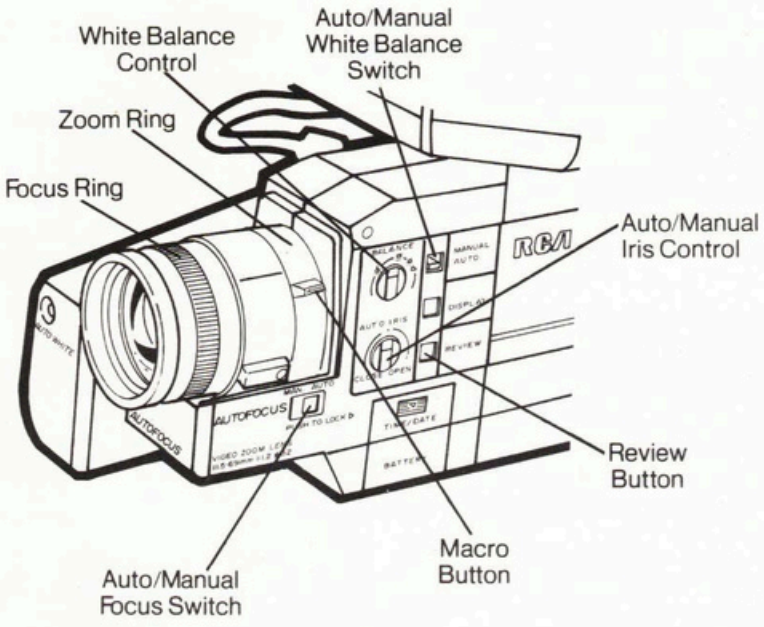


Date/Clock Set Controls (under side panel)

NOTE: To correct date/clock information during programming, press the *SHIFT* button until the incorrect digit is flashing. Then use the *CHARACTER* button to enter the correct digit. If you wish to correct information after starting the date/clock, first press the side *DISPLAY* button, then press *START* and repeat Steps 4 through 9 at left.

The date/clock graphics will be recorded whenever they appear in the viewfinder. To display the clock, press the *DISPLAY* button on the side of the Camcorder. To display date and clock together, press *DISPLAY* again. For date display only, press *DISPLAY* a third time. Pressing *DISPLAY* a fourth time removes the graphics.

Recording Features, cont'd.



Focusing Your Camcorder

- **Auto Focus:** Set the *AUTO/MANUAL FOCUS* switch to the *AUTO* position for automatic focus operation. *NOTE:* The Camcorder's Auto Focus system uses infrared light and will focus on the nearest object that reflects this light. The following cautions should be observed when using Auto Focus:
  1. Sloping or inclined surfaces may not be focused because the reflected light will not be returned to the Auto Focus window.
  2. When shooting through a window, the Auto Focus system may focus on the window glass instead of your subject.
  3. Dark objects, such as a subject's clothing, may absorb the infrared light. Manual focus may be required.

  If any of the above conditions exist, switch off the Auto Focus system and focus manually. Auto Focus may not work reliably on subjects more than approximately 35 feet away from the Camcorder.

When using the wide-angle or telephoto lens adapter, turn off the Camcorder's autofocus and focus manually. It is not possible to use autofocus when these adapters are being used.

- **Manual Focus:** For manual focusing, set the *AUTO/MANUAL* switch to the *MANUAL* position. Then, before you start recording, zoom in on your subject and adjust the *FOCUS RING* so that a sharp, clear picture is displayed in the viewfinder. By using this procedure for manual focus, the camera will maintain proper focus when the zoom lens is returned to the wide-angle position.

  You can also quickly and momentarily switch from *MANUAL* to *AUTO FOCUS* by pushing the *AUTO/MANUAL FOCUS* switch inwards. When the switch is held in this position, automatic focus is activated and remains activated until the switch is released. This is useful if you are shooting a relatively static scene in *MANUAL FOCUS* and need to quickly and momentarily use *AUTO FOCUS* to adjust for a change in scene.

- **Macro Focus:** For shots as close as ⅜ inch from your subject, first place the *AUTO FOCUS* switch in the *MANUAL* position. Then rotate the *ZOOM RING* to the wide-angle position (11.5 on *ZOOM RING*). Rotate the *ZOOM RING* into the *MACRO* position by pushing in and holding the *MACRO* button while slowly rotating the Zoom ring until you get a sharp picture. *NOTE:* Zooming is not possible when in Macro mode; to change the size of the subject, move the lens closer or further away from it. The Focus ring has no effect in Macro mode.

Automatic White Balance

Your Camcorder is equipped with a constant automatic white balance system which will continuously maintain proper color balance when the *WHITE BALANCE* switch is in the *AUTO* position.

NOTE: You also have the option of adjusting color balance yourself in unusual lighting situations or other taping conditions. To adjust color balance, place the *WHITE BALANCE* switch in the *MANUAL* position and adjust the *WHITE BALANCE* control to a symbol matching the existing lighting condition (BULB for incandescent light; TUBE for fluorescent light; SUN for sunlight; and CLOUD for cloudy daylight).

For best manual color balance results, use a color monitor to view the Camcorder's picture while adjusting the *WHITE BALANCE* control for the most natural color picture.

Auto/Manual Iris

With the *IRIS* control in the center position, your Camcorder electronically senses the available light in a scene and automatically opens or closes the lens iris for the best possible picture. However, you also have the option of manual iris adjustment to compensate for unusual lighting, using the *IRIS* control to vary the amount of light entering the Camcorder.

Use *MANUAL IRIS* for this situation: when the background is bright and the subject appears to be too dark, adjust the *MANUAL IRIS* knob clockwise to widen the iris opening and make the subject brighter.

Quick Review

During a recording session, you can review the last few seconds of a taped scene by pressing the *REVIEW* button and watching the viewfinder (*PLAYBACK/CAMERA* switch must be in *CAMERA* position). Quick Review helps you remember the last scene you recorded on a tape and lets you set up the next scene. After quick review playback, the Camcorder returns to the Record/Pause mode.

Most importantly, Quick Review returns the tape to its previous point after reviewing a scene. As a result, you can use this feature and then start recording again without creating a "gap" or picture break-up between taped segments.

Basic Operation: Playback

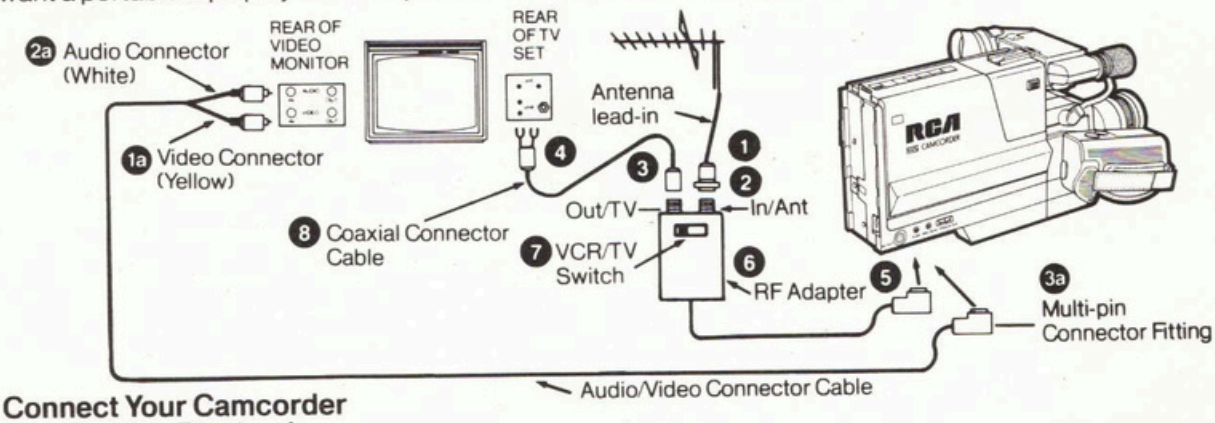
How to Play Back Tapes with Your Camcorder

The simplest way to watch tapes recorded on your Camcorder is to play them directly on your VHS-format VCR. However, your Camcorder itself can also play back any VHS tape recorded in the SP mode, including prerecorded cassettes. That's a real advantage if you don't have a separate VHS VCR, or if you want a portable tape playback system for vacation trips and other uses.

Your Camcorder can play back tapes on a variety of different display devices. You can watch tape playback immediately after recording on the Camcorder's electronic viewfinder. Or you can hook the Camcorder directly to your TV set or Video Monitor to view tapes. You can even feed the playback signal to another VCR and make copies of your home tapes.

The following series of instructions will show you the different ways to view tapes using the Camcorder.

NOTE: Although you can use the battery to power the Camcorder during tape playback, you will want to use the AC adapter/charger if you intend to watch for an extended period.



How to Connect Your Camcorder to a Standard TV for Playback

Use the following steps if you have a standard TV with a VHF antenna input. You will need the *RF Adapter* that was packed with your Camcorder. You will also need the length of supplied *coaxial cable* to connect the RF adapter to your TV.

1. Disconnect the VHF antenna from your TV set. (You can leave the UHF wires alone.)
2. Connect your VHF antenna to the *IN/ANT* terminal on the RF adapter. (If your VHF antenna lead-in is flat twin-lead, use the 300/75-ohm transformer supplied.)
3. Attach one end of the coaxial cable to the *OUT/TV* terminal on the RF adapter.
4. Connect the other end of the coaxial cable to the *VHF IN* terminal on the back of your TV. (If your TV has screw terminals, connect the adapter's flat lead connectors to the screw terminals.)
5. Plug the multi-pin connector fitting on the RF adapter into the *AUDIO/VIDEO OUT* jack on the Camcorder. To aid connection, match the tabs on the fitting with the notches on the Camcorder jack. Don't force the fitting; if it does not slide in easily, check your marks and try again. (If the Camcorder is used as a camera while connected to the TV or Monitor, be sure to turn the set's volume down to prevent a high pitched squeal caused by feedback.)
6. Set the *RF OUTPUT* switch on the RF adapter to Channel 3 or 4, whichever is not used as a broadcast channel in your area. Turn on the TV and tune it to the channel you have chosen.
7. Place the *VCR/TV* switch on the RF adapter in the *VCR* position to view Camcorder playback. During playback, you may fine tune the TV channel if necessary. (For details of playback operation, refer to Page 15.)
8. For normal TV viewing, place the *TV/VCR* switch on the RF adapter in the *TV* position. (You may leave the RF adapter hooked up to the set, even if you disconnect the Camcorder from the adapter.)

How to Connect Your Camcorder to a Video Monitor for Playback

Use the following steps if you have a Video Monitor or Monitor-Receiver with direct inputs for audio and video signals. You will need the *Audio/Video Connector Cable* that was packed with your Camcorder.

1a. Connect the yellow plug on the audio/video connector cable to the *VIDEO IN* jack on your Monitor.

2a. Connect the white plug on the audio/video connector cable to the *AUDIO IN* jack on your Monitor.

3a. Plug the multi-pin connector fitting on the audio/video connector cable into the *AUDIO/VIDEO OUT* jack on the Camcorder. To aid connection, match the tabs on the fitting with the notches on the Camcorder jack. Don't force the fitting; if it does not slide in easily, check your marks and try again.

The Camcorder is now connected to the Monitor for tape playback. For details of playback operation, refer to Page 15.

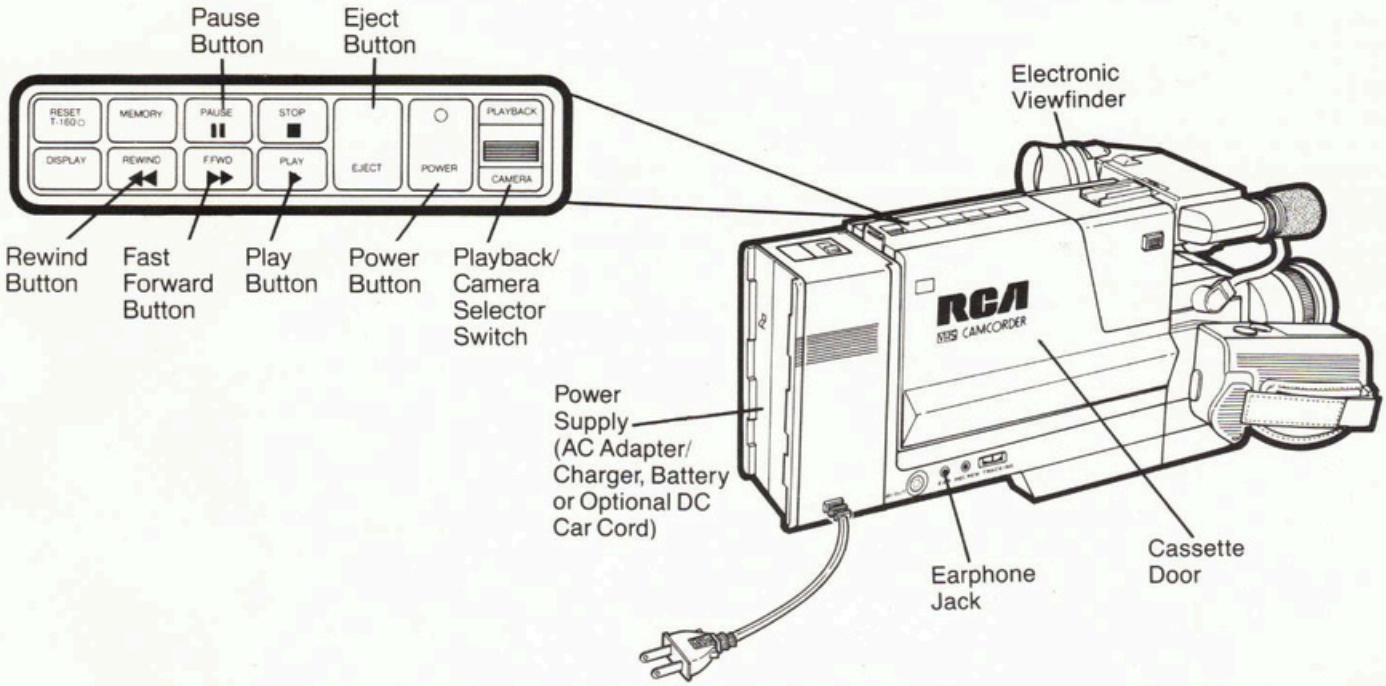
How to Connect Your Camcorder to a VCR for Tape Copying

The audio/video connector cable may be used to connect the Camcorder's *AUDIO/VIDEO OUTPUT* to another VCR to make copies of tapes. For this hook-up, simply follow the procedure described above, substituting a VCR for the Video Monitor.

NOTE: RCA's optional VAA002 Video/Audio Input Adapter makes it possible to use your Camcorder to record video and audio **from** other sources such as TV Monitors, VCR's, or computers. See VAA002 Owner's Manual for connection and operation.

CAUTION: The unauthorized recording of copyrighted material may infringe the rights of others. Such recordings should not be made.

Playback Operation, cont'd.



Playing Tapes Through the Viewfinder

Viewfinder playback is the simplest way to watch tapes using the Camcorder, but because the display is black & white, this method is generally used only to review scenes immediately after recording.

To view a tape through the Camcorder's electronic viewfinder, follow these steps:

1. Turn the Camcorder on by pressing the *POWER* button, then press the *EJECT* button and insert the cassette you wish to view.
2. Place the *CAMERA/PLAYBACK* switch in the *PLAYBACK* position.
3. If you wish to hear the tape's audio, plug the earphone into the earphone jack.
4. Press the *PLAY* button. Playback can be viewed by watching the viewfinder screen.
5. If you wish to visually scan the tape in forward or reverse, press and hold the *FAST FORWARD* or *REWIND* button while in the *PLAY* mode. Release the *FAST FORWARD* or *REWIND* button to return to normal playback speed.
6. If you wish to stop the action, press the *PAUSE* button while in the *PLAY* mode. Press the *PAUSE* * button again to return to normal playback.
7. Don't forget to rewind the cassette when you are finished viewing tape playback.

Playing Tapes Through a TV or Video Monitor

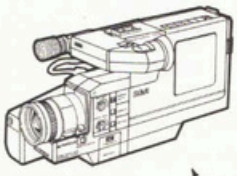
Follow these steps when you wish to play back tapes on your TV or Video Monitor (after you have connected your Camcorder to the appropriate display device).

1. Turn the Camcorder on by pressing the *POWER* button, then press the *EJECT* button and insert the cassette you wish to view.
2. Place the *CAMERA/PLAYBACK* switch in the *PLAYBACK* position.
3. Press the *PLAY* button to begin playback.
4. If you wish to visually scan the tape in forward or reverse, press and hold the *FAST FORWARD* or *REWIND* button while in the *PLAY* mode. Release the button to return to normal playback speed.
5. If you wish to stop the action, press the *PAUSE* * button while in the *PLAY* mode. Press the *PAUSE* button again to return to normal playback.
6. Don't forget to rewind the cassette when you are finished viewing tape playback.

NOTE: The picture will contain some horizontal lines during forward search, reverse search and stop action.

*Pause is designed for momentary interruptions and should not be used for an extended period of time. If the Camcorder remains in the Play/ Pause mode for more than 5 minutes, the Camcorder will automatically go to stop mode to prevent excessive tape wear.

Camcorder Accessories

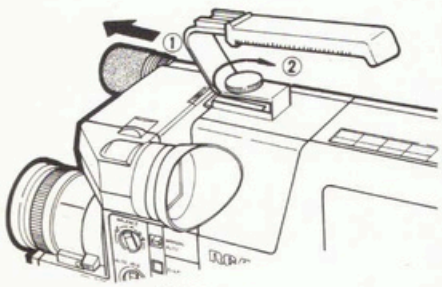


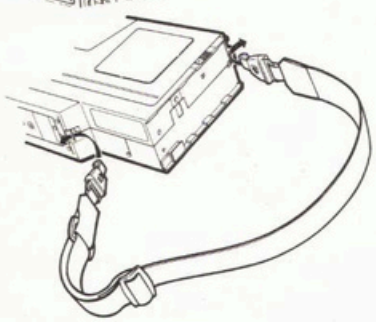
Mounting Your Camcorder on an Optional Tripod

The Camcorder may be attached to a tripod when you wish to make recordings without holding the Camcorder. This will keep the Camcorder very steady and produce excellent video results. Mount the Camcorder onto a tripod by attaching the mounting screw on the tripod to the mounting hole on the bottom of the Camcorder, as shown at left.

CAUTION: Before using a tripod, make sure it is stable enough to hold the Camcorder without falling over.

CAUTION: When attaching your Camcorder to a tripod, be careful not to force the tripod screw into the Camcorder's tripod mounting hole. The tripod screw should not protrude into the Camcorder more than approximately 3/8". Forcing the screw could damage the mounting hole.



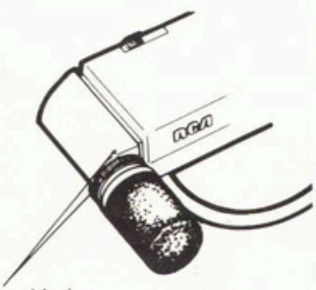


Using the Camcorder's Carrying Handle and Shoulder Strap

Among the accessories packed with your Camcorder are a carrying handle and shoulder strap. The carrying handle attaches to the Camcorder's accessory shoe and provides a firm gripping place when carrying the Camcorder by hand. The shoulder strap is designed to let you carry the Camcorder from your shoulder and – when you are ready to record – bring the unit to shooting position in one quick movement.*

The proper procedures for attaching the carrying handle and shoulder strap are outlined in the diagrams shown here.

*NOTE: When using the Camcorder with the shoulder strap, you may find it convenient to slide the EVF module completely to the right and tilt the viewfinder up. This helps prevent the viewfinder from striking your body as you move, which could damage the EVF under certain conditions.



Match Reference Marks on Microphone Locking Ring with Marks on Viewfinder

Using an Optional External Microphone

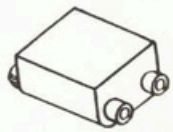
Removing the Camcorder's built-in microphone will expose a jack that accommodates an external microphone (optional). To remove the built-in microphone, use the following procedure: Both the microphone locking ring and the viewfinder module have reference marks for ease of removal. Turn the microphone locking ring until the two marks meet, and then pull out the built-in microphone. You can now plug an external microphone directly into the exposed jack.

To reattach the built-in microphone, match the reference marks on the viewfinder and the microphone locking ring, insert the microphone into its housing and turn the locking ring clockwise to lock the mike into place.

Optional Accessories

KK040 Soft Carrying Case accommodates Camcorder and accessories.

KK042 Hard Carrying Case affords greater protection for Camcorder and accessories when traveling.



VAA002 Video/Audio Input Adapter permits you to record video and audio from an external source.

CRM010 Record Start/Stop Remote Switch allows you to start and stop Camcorder recording from a distance.

CGA020 Character Generator/Titler makes it easy to add titles to tapes.

WM002 Wireless Microphone System includes an omni-directional microphone, transmitter, receiver, antenna and audio plug in a compact, lightweight system.

LX152A Lens Extender increases Camcorder's magnification by 1.5 times throughout its zoom range. Contained in a snap-closure black vinyl case with padded interior.

WAL01A Wide Angle Lens expands Camcorder's field of view by a factor of .6 to permit wide panoramas without panning. Black vinyl snap-closure case with padded interior for easy-access storage.

LFK115A Special Effects Lens Filter Kit helps you create professional special effects with mirage, polarizer and highlighter filters.

FSA036A Film Slide Adapter permits transfer of slides to tape. Kit includes three step rings, three sizes of frame holders and one filter. Accommodates 35mm slides.

DCC012 DC Power Cord lets you operate your Camcorder from your car's 12-volt negative ground electrical system.

Troubleshooting

Check This List First If You Have A Problem

Sometimes problems can be easily solved by checking a few basic things. Check below before you call for help or take your Camcorder to an RCA Authorized Video Camera Servicenter or the RCA Service Company. It could save you time and money.

If service should be necessary, RCA Authorized Video Camera Servicenters and the RCA Service Company are trained and equipped for qualified Camcorder service and maintenance.

No Power (indicator will not come on)
- If using battery, recharge.
- If using AC adapter/charger, make sure unit is plugged into working outlet and Camera/Charge switch is in CAMERA position.

Won't Record or Play Back
- If Power light is blinking, there is moisture in unit. Leave power on and wait for light to stop blinking.
- No cassette in Camcorder.
- Eject and reinsert cassette.
- Broken tape; try another cassette.
- End of tape; rewind cassette.

Won't Record
- Safety tab has been removed from cassette.
- Place *CAMERA/PLAYBACK* switch in *CAMERA* position.

Won't Play Back
- Place *CAMERA/PLAYBACK* switch in *PLAYBACK* position.

Tape Stops During Rewind or Fast Forward
- Memory function is active. If tape counter shows an "M", press memory button once and continue to rewind or fast forward cassette.

Tape Will Not Rewind
- Tape is already rewound.

No Picture in Viewfinder
- Check viewfinder cable connection.
- Remove lens cap.

Camcorder "Forgets" Date and Time
- Replace batteries (see Page 4).

Camcorder Will Not Eject Cassette
- Camcorder has no power. Attach power source and press *EJECT* button.

Camcorder Remains in Still Frame Mode
- Press *PAUSE* button for normal playback.

Poor Auto Focus Operation
- Place *AUTO/MANUAL FOCUS* switch in *AUTO* position.
- Make sure operator is not covering Auto Focus window during recording.
- Subject is dark or behind glass; Auto Focus may not work under these conditions. Switch to manual focus.
- Lens is smudged and image appears unfocused.
- Viewfinder eyepiece focus is misadjusted (see Page 11).

Poor Picture Quality During Recording
- Insufficient lighting. If picture looks too dark in the viewfinder with *IRIS* control in *CENTER* position, add light to scene.

Poor Picture Quality During Playback
- If picture contains black and white streaks, adjust tracking control to correct.
- If picture appears snowy, clean video heads with a non-abrasive head cleaning tape such as RCA #AV009W.

Making Better Videos

Camcorder Recording Tips

DO use your Camcorder's zoom to help you focus manually. Before you start recording, zoom in on your subject, adjust the *FOCUS RING* until you see a clearly focused image in the viewfinder, then zoom back to the desired angle of view. Provided the subject-to-Camcorder distance does not change, the subject will remain in sharp focus over the entire zoom range. *REMEMBER:* It's easier to make professional-looking videos by checking the focus before you start recording.

DON'T move the Camcorder rapidly from side to side while you're recording. A gradual "pan" avoids blurring in your taped scene.

DO try to make sure indoor scenes you record are well-lit. This improves picture quality and color reproduction.

DO try to avoid taping backlit subjects indoors. Bright light behind your subject may cause it to appear very dark and low in detail. Adjusting your *IRIS* control can help overcome this problem.

DON'T move your Camcorder's *ZOOM LEVER* quickly when controlling the zoom lens manually. A slow, constant speed gives your manual zooms a more professional look on tape.

DO keep your Camcorder level while taping. Otherwise, your scenes will appear tilted. Keep a close eye on this in your viewfinder!

DO be aware of video and audio backgrounds. Background visual details you barely notice while you're taping may show up as visual "clutter" when you review your taped scene. Background noises (especially television sets and radios, household appliances, traffic sounds) can detract from the sounds you want to record. And *REMEMBER:* don't bump or tap your Camcorder's microphone while you're taping, because this sound will be recorded on your tape, as will anything said by Camcorder operator!

Care and Maintenance

Proper Care of Your Camcorder

- Be especially careful to keep dust from entering the Camcorder's cassette door. Dust and grit are abrasive, and will cause excessive wear of both the tape and the recording/playback heads.
- RCA recommends that RCA video cassettes be used with this unit. These tapes have been manufactured to RCA's critical specifications, and use of tape not meeting these specifications could considerably reduce the performance of your Camcorder.
- Use of poor quality tapes can contaminate the video heads, resulting in a snowy picture or no picture at all during playback. **Head cleaning is considered normal maintenance and is not covered by RCA's warranty.** Playing a new RCA tape for approximately 30 minutes will often clean the heads and improve your picture. You can also use a chemical non-abrasive head cleaning tape (RCA Stock No. AV009) available from your dealer or many electronic supply stores.
- Always replace the lens cap on the lens when the Camcorder is not in use
- To clean the lens, always use a commercial camera lens solution and paper. Improper cleaning can scratch the lens. *Do not touch the lens with your fingers.*

Storing Your Camcorder

- Store and handle your Camcorder in a manner that will not subject it to swinging, shaking, or dropping. The Camcorder could be damaged by improper handling or storage.
- Don't store the Camcorder in temperatures below −22°F or above 149°F.
- Always remove the cassette and the AC adapter or battery from the Camcorder when the Camcorder is not in use.
- Retain the original carton for future storage or shipping purposes.

Things to Avoid

- Do not attempt to disassemble your Camcorder. There are no user-serviceable parts inside.
- *Never attempt to force open the cassette door.* If the battery reaches its empty level during recording, the Camcorder will shut off but the battery should have enough reserve power to eject the cassette when you press the *EJECT* button. If the Camcorder does not eject the cassette, do not attempt to force open the cassette door. This will damage your Camcorder. To remove the cassette, simply power your Camcorder with the AC adapter/charger or recharge the battery before attempting to eject the tape.
- Do not use the Camcorder in extremely high humidity.
- Do not use the Camcorder for extended periods in temperatures below 40°F or above 95°F.
- Do not expose the Camcorder or AC adapter/charger to rain or moisture. If either component becomes wet, immediately turn off the power and take the unit to an RCA Authorized Video Camera Servicenter.
- Do not use an AC adapter/charger other than the one specified for your Camcorder. Your AC adapter/charger should be operated on power line voltages of 100 – 240 volts AC, 50/60 Hz.
- Do not use the accessory shoe on your Camcorder to mount a light. Heat from the light could cause damage to the Camcorder's case.
- Do not operate your Camcorder in a strong magnetic field to avoid interference to or erasure of recorded information.

Index

AC Adapter/Charger 2, 3, 4, 9, 10, 14, 15, 17, 18
Accessories (Optional) 7, 10, 14, 15, 16
Accessories (Supplied) 4, 14, 16
Accessory Shoe 5, 18
Attaching Viewfinder to Camcorder 4
Audio/Video Input/Output Connection 7, 14
Auto Focus 4, 5, 13, 17
Auto Focus Window 5, 17
AUTO/MANUAL FOCUS Switch 6, 11, 13, 17
AUTO/MANUAL WHITE BALANCE Switch .. 6, 11, 13
Automatic White Balance 4, 6, 13
Batteries (Date/Clock) 4
Battery Compartment 4, 6
BATTERY EJECT Lever 5, 10
Battery Level Indicators 9, 12
Battery (Rechargeable) 4, 9, 18
CAMERA/CHARGE Switch 4, 9, 10, 17
CAMERA/PLAYBACK Switch 4, 8, 11, 13, 15, 17
Care and Maintenance 18
Cassette Door 7, 11, 15, 18
Cassette Tapes 3, 17, 18
Charge Indicator Light 9
Charging Battery 4, 9
Connections (TV/VCR/Monitor) 14
Control Panels 6, 8, 15
Counter Memory 8, 12
COUNTER MEMORY Button 8
COUNTER RESET/T-160 Button 8
COUNTER/TIME REMAINING DISPLAY Button 8
DC Power Cord 4, 10, 15, 16
DC Power Cord Jack 7, 10
Date/Clock Display 12
DATE/CLOCK DISPLAY and SET Buttons 6, 12
Dew Indicator 8, 17
Earphone Jack 7, 15
EJECT Button 9, 11, 15, 18
Electronic Viewfinder (EVF) 3, 4, 5, 7, 9, 11, 12, 15, 16, 17
FAST FORWARD Button (F. FWD) 8, 15
Features and Functions 3
FOCUS RING 5, 13, 17
IRIS Control 6, 11, 13, 17
Lens 5, 17, 18
Lens Cap Holder 6
Location and Use of Controls 5, 6, 7, 8
Macro Focus 13
MACRO Button 5, 13
Making Better Videos 17
Manual Focus 13
Manual Iris Control 13
Microphone 4, 5, 16, 17
PAUSE Button 8, 15, 17
PLAY Button 8, 15, 17
PLAYBACK/CAMERA Switch 4, 8, 11, 13, 15, 17
Playing Tapes 14, 15
POWER Button 4, 8, 11, 15
Power Connector/Connector Cover 7
Power Indicator 8
Power Supplies 9, 10, 11, 14, 15
Power Zoom Buttons 7
Preparations for Use 4
Quick Operation Steps 4
Quick Review 13
RECORD START/STOP Button 7, 11
Recording Features 11, 12, 13
Remote Start/Stop Jack 7
REVIEW Button 6, 11, 13
REWIND Button 8, 15
Safety Precautions 1
Specifications ..... Back Cover
STOP Button 8
Storing Your Camcorder 18
Table of Contents 2
Tape Counter with Memory 8, 12, 17
TAPE EJECT Button 8
Time Remaining Display 8, 12
TIME REMAINING DISPLAY Button 8
TRACKING Control 7
Tripod 16
Troubleshooting 17
Unpacking Camcorder 4
Viewfinder 3, 4, 5, 7, 9, 11, 12, 15, 16, 17
Viewfinder Connection 7
Viewfinder Display 12
Viewfinder Focus Adjustment 11
Viewfinder Indicator 9, 11, 12
VIEWFINDER LOCK/RELEASE Lever 4, 5
Viewfinder Tilt Adjustment 11
Warranty ..... Back Cover
Warranty Registration 1
WHITE BALANCE Control 6, 13
White Balance Detection Window 5
WHITE BALANCE Switch 6, 11, 13
Zoom 5, 7
ZOOM RING and LEVER 5, 13, 17

Specifications

General

Power requirement: 12VDC

Power consumption: 9.5 watts (nominal)

Weight: 5.5 lbs. (2.5 kg)

Dimensions: $6^{7}/_{16}$" (W) × $7^{7}/_{16}$" (H) × $14^{1}/_{8}$" (D) (164 × 189 × 359 mm)

Video Recorder Section

Format: VHS

Record/Playback System: Four video record/playback heads

Video Signal: EIA Standard NTSC Color

Camera Section

Scanning: 525 Lines/60 Fields/30 Frames

Required Minimum Illumination: 0.7 foot-candle (7 lux)

Image Sensor: ⅔" solid state MOS Imager

Tripod Mount: One ¼" x 20 threaded hole

Lens Diameter: 52mm

RCA Limited Warranty

What does your warranty cover:
- Any defect in material or workmanship

For how long after purchase:
- Ninety days for labor charges.
- One year for parts.
- The warranty period for rental Camcorders begins with the first rental.

What will RCA Do:
- Pay any RCA Authorized Video Camera Servicenter the labor charges to repair your Camcorder.
- Provide new or, at our option, rebuilt replacement parts for the RCA Video Camera Servicenter to make the repairs.

How do you get service:
- Take your Camcorder to any RCA Authorized Video Camera Servicenter or to the RCA Service Company. For their names and locations, ask your dealer or RCA Distributor, or look in the Yellow Pages.
- Show the service technician your Warranty Registration or evidence of purchase date.
- Pick up your Camcorder when repairs are completed.

What does your warranty *not cover:*
- Transportation to and from the Servicenter.
- Customer instruction. Your Owner's Manual provides information regarding operating instructions and user controls. For additional information ask your dealer.
- Cleaning of video/audio heads, which is normal maintenance.
- Damage from misuse or neglect.
- Camcorders which have been modified or incorporated into other products.
- Camcorders purchased or serviced outside the USA.

How does state law relate to this warranty:
- This warranty gives you specific legal rights, and you also have other rights which vary from state to state.

What if you purchased your Camcorder in Canada:
- Refer to the Canadian Warranty.

Si un livret d'instructions en français n'est pas inclus avec votre appareil, vous pouvez en obtenir un (INDIQUER LE NUMÉRO DE MODÈLE VOTRE NOM ET VOTRE ADRESSE) en vous addressant à:

RCA Inc.
Service des données techniques
5575 av. Royalmount,
Ville Mont-Royal, Québec, Canada
H4P 1J8

RCA Corporation
Consumer Electronics Division
600 N Sherman Dr, PO Box 1976
Indianapolis, Indiana 46206

© 1986 RCA Corporation
Trademark(s) ® Registered
Marca(s) Registrada(s)
Printed in Japan
Part Number 2822 408-1R1
E72118
4651342